Point-of-Compliance Regulation and Point of Allocation in a CO_2 Cap-and-Trade Program for the Electricity Sector in California

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Contractor: Resources for the Future
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The Issue

With passage of AB 32, the Global Warming Solutions Act, California has emerged as a leader in addressing climate change. One strategy under consideration is the implementation of a carbon dioxide (CO_2) emission cap-and-trade program. The policy design features of such a program will affect its cost-effectiveness and the political feasibility of the regional effort to combat greenhouse gas (GHG) emissions, as well as who wins and loses under different approaches. Cap-and-trade program design issues are especially important in the electricity sector, which poses special challenges under a statewide program.

Project Description

Funded by PIER's Exploratory Environmental Grants Program, this research focuses on three specific design features for a CO_2 emission cap-and-trade program:

1. Identification of the point of regulatory compliance within the electricity fuel cycle.
2. Identification of the point for initial distribution of emission allowances within the electricity fuel cycle.
3. The approach used to distribute allowances initially, including free allocation or an auction.

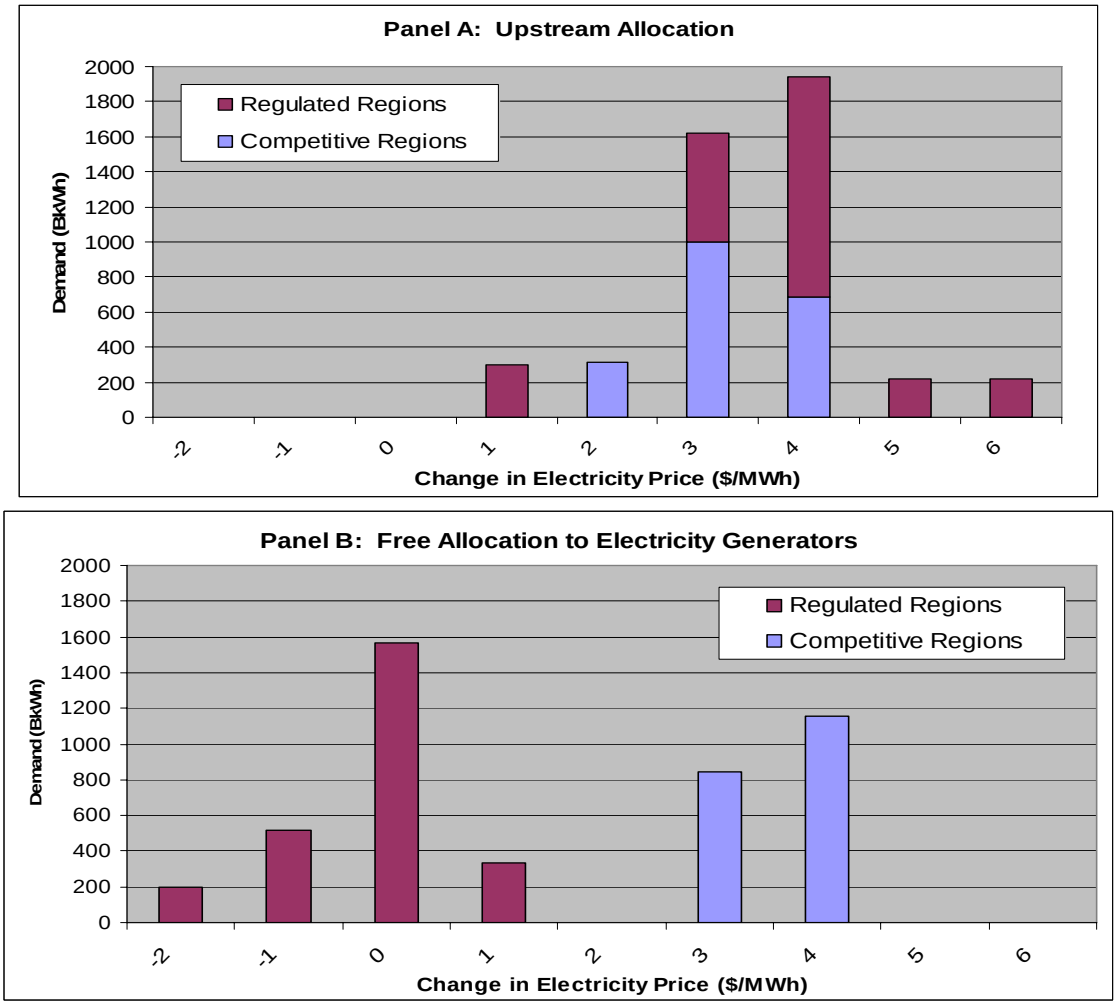
The study will analyze different ways of targeting compliance responsibility and different policy options for the initial distribution of CO_2 emission allowances in California. The analysis addresses several important questions, including:

- How are incentives for changing behavior and reducing emissions affected by the selection of a point-of-compliance responsibility in the electricity sector?
- How does the choice of point-of-compliance responsibility affect the incidence of cost (who bears the cost) of the cap-and-trade CO_2 regulation?
- How will different approaches to the initial distribution of emission allowances affect the price of electricity in California? How will they affect the costs of the program, and who bears those costs?

- What is the relationship between emission leakage (i.e., increases in CO_2 emissions outside of California) and different approaches to allocation?

To answer these questions, the research team will analyze how various decisions about point of compliance and point of allocation may affect incentives for economic behavior, using simulations to investigate the potential magnitude of these effects.

California relies on cost-of-service regulation to set retail electricity prices. Thus, allowances distributed for free could have different effects on retail electricity prices than allowances sold at auction. This difference is illustrated in the figure below for the case of a modest national cap-and-trade policy.[1] The figure shows that upstream allocation of allowances to fuel suppliers (which is equivalent to an auction from the perspective of the electricity sector) affects consumer electricity prices similarly in regulated and unregulated regions of the country, but that free allocation of allowances to electricity generators will have a much more modest effect on electricity prices in regulated regions than in competitive regions.



Emission allowances distributed for free could have different price effects than allowances sold at auction. (Source: Burtraw and Palmer 2007)

[1] Burtraw, Dallas, and Karen Palmer. 2007. "Compensation Rules for Climate Policy in the Electricity Sector," RFF Discussion Paper.

PIER Program Objectives and Anticipated Benefits for California

This project offers numerous benefits and meets the following PIER program objectives:

- **Reduce the environmental impacts of electricity generation.** By studying the effects of different policy designs on emissions leakage, this project will help policy makers to identify policies that avoid leakage.
- **Reduce the cost of electricity.** By analyzing key design features for a cost-effective global warming policy for California, this project will provide policy makers with information they need to efficiently achieve California's greenhouse gas reduction goals.

Final Report

PIER-EA staff intend to post the final report on the Energy Commission website in fall 2008 and will list the website link here.

Contact

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